

## **REMARKS/ARGUMENTS**

In the office action claim 1-9 and 12-22 were rejected and claims 10,11,and 23 were objected to, but would be allowed if rewritten in independent form. New claims 24-49 have been added.

Applicant has submitted an entirely new set of claims for the following reason: This application is a divisional of US patent 6 590 651. The claims which were examined in this action are those which were in the '651 patent at filing. A preliminary amendment was to be filed in this case but was not submitted in time for the first Office Action. Therefore, the new claims have been formulated with regard to the invention sought by the applicant in view of the existing '651 claims and not in response to cited art. Nevertheless, arguments are presented over the art of record.

### **The Cited Prior Art**

The examiner relied on the Sato and Winston references in the prior rejection. With respect to the claims as formulated, the rejection under 35 USC sec 102 or sec 103 are now rendered moot for the following reasons. Several of the claims were also found allowable but for the need for a terminal disclaimer because of an asserted double patenting rejection. The new claims presented herewith, are distinct from those of the '651 patent and should not be subject to the terminal disclaimer requirement.

The Winston references discloses using ultrasonic energy for *treatment* of a cardiac condition. It is a one-way device. That is, it sends out energy but does not look for the reflected energy in any way.

The probe head rotates, but the teaching of Winston is merely that rotation is useful to treat different areas of a vein.

Compare Winston to the claimed invention. Claim 24 is a system for precisely determining characteristics of a target material. From the start, Winston does not determine the characteristics of anything. It only sends out energy and rotates.

Claim 24 also includes a very effective structure for increasing the sensitivity of a fiber optical sensor while reducing the ultimate plague of optical sensors: cross-talk. Cross-talk is caused by light scattering into adjacent target material or tissue. Yet to test a tissue sample, it is important to have high resolution. This is logically accomplished by having very close alignment of optical fibers to achieve a sufficiently high resolution measurement.

The problem is of course, cross-talk, in that with the emission of light energy, for example, into the target, some of the energy will bleed through into adjacent tissue and “pollute” the measurement of that adjacent tissue. Therefore the solution which the examiner believes is found in Sato, (to use high density fibers) will suffer from severe cross-talk or not have high enough resolution.

It is noted that in the office action, the examiner states about Sato that *“it is well known in the art that placing fibers in a pattern increase the area by providing a uniform illumination and receiving therefore increasing the sensitivity of the measurement”*. It is respectfully submitted that this is not correct. In fact the opposite is true. Providing a uniform illumination nor using a pattern has nothing to do with sensitivity. The key is how close are the fibers to each other. If they are close enough to achieve high sensitivity, they are will suffer from cross-talk at some level. That would be a problem for Sato if they were trying to measure a larger surface area, but Sato teaches only point measurement. In short, the Sato solution would not work because is provides no solution to cross-talk and increasing the density of fibers only makes the accurate measurements work.

Instead, in the claimed invention, an array of fibers can be positioned in one orientation and then moved to second adjacent location and detection can be taken from both positions sequentially. By the use of such a structure (and indeed a method in later

claims), the two measurement locations can be extremely close to each other without the risk of cross-talk because the measurements do not occur simultaneously, but rather sequentially. This is a fundamental breakthrough which overcomes the problem of cross-talk and eliminates practical limitations on the resolution of the sensor.

Remember that Sato describes a non-moving single point fiber optic probe for making a single point measurement. It does not give any teaching of rotation or other movement of the fibers to make sequential measurements.

Therefore, combining the teaching of Winston and Sato would produce, at very best, only a fiber optic probe which could be rotated, but no teaching of the benefit of doing so. Consequently, the failure of either reference to recognize the benefits of sequential measurement to reduce cross-talk.

Winston does not teach how or why accurate registration of the rotation is important. It is used to destroy plaque. Resolution is not a factor in this one-way device, since it does not measure anything.

In the present invention, the resolution of the measurement is highly dependent upon precision movement of the core to adjacent points. Again, Winston is not a measurement device and Sato doesn't rotate, so neither references is a useful teaching of this feature.

Claims 25-28 further defines the structure which eliminates cross-talk issues and is likewise not taught in the prior art.

To combine Winston and Sato to achieve the claimed invention would require a significant infusion of inventive thought, which is clearly not within the scope of a sec. 103 rejection.

Claim 29-30 further define the relative positioning of the original and new positions of the core, which still make it possible to achieve high resolutions without encountering cross-talk. Clearly, Sato and Winston are of no help in achieving this advantage.

Claims 31-33 add additional refinements to the structure not shown in the art.

Claim 34-36 adds structure relating to how the core rotation can be precisely aligned from position to position without losing registration, which is key to high resolution measurements.

Claims 37 adds the use of an end cap. Claim 38 calls for an index matching cap. Winston does not require such index matching as it is a purely emitting device. Matching becomes critical primarily on reflectance where signal strengths are much low. Claim 39 combines index matching and lubrication. Since Sato is a probe system where pressure is intentionally (and desirably) applied to the tissue, lubrication plays no role.

Claim 40 is an independent claim calling for means for *rotating and holding* a device at precisely predetermined positions. As previously argued, Winston device is not designed for precise repositioning on rotation as there is no reason for it to do so, and thus Sato is not a useful teaching of this feature. Remember, Sato, doesn't move at all and thus does not, in combination help to achieve the claimed combination.

Claim 41 and 42 specifically introduce the cross-talk reduction feature of the invention, which is not, as argued above, shown in the prior art.

Claim 43 introduces the end cap combination with the interrogation locations evenly distributed across its face. The Winston reference is silent on this point, but in any case, as an ultrasonic device, it has no purpose in distributing locations across the face.

Claim 44 is an independent method claim which is allowable for reasons set forth above with respect to the apparatus claims. Specifically, the repositioning of interrogations

positions can be close enough that cross-talk would otherwise ruin the test results had the method not been a sequential system. This feature cannot be derived from the cited art.

Claim 45-49 are directed to further specific steps which are consistent with cross-talk reduction or elimination and should likewise be allowable.

In view of the forgoing it is submitted that present claims are patentable over the cited art. Reconsideration is respectfully requested.

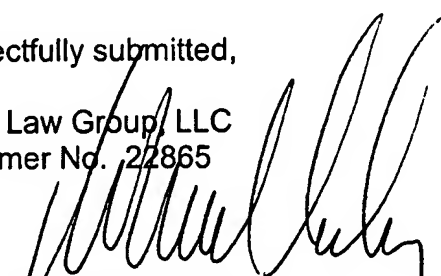
If a telephone conference would be helpful in resolving any issues concerning this communication, please contact Applicant's attorney of record, Michael B. Lasky at (952) 253-4106.

Respectfully submitted,

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